IN THE CLAIMS

1. (**Currently Amended**) A method of recognizing words, comprising:

defining word patterns of a plurality of known words by a plurality of paths, wherein each path connects elements in a word on a virtual keyboard, wherein the virtual keyboard contains a set of characters forming elements in the word without temporary target letters being placed adjacent to a current stroke location;

accepting a stroke as an input on the virtual keyboard layout; ~~and~~

~~recognizing a word pattern by processing the stroke using a combination of a plurality of channels that selectively process different aspects of the stroke in relation to the plurality of the paths on the virtual keyboard~~

processing the stroke using a combination of a plurality of channels, each channel selectively measuring a different aspect of the stroke's similarity to the plurality of the paths on the virtual keyboard; and

converting each different aspect of the stroke's similarity to probability estimates;

mathematically integrating the probability estimates of the plurality of channels to produce integrated probability estimates of candidate words.

2. (**Currently Amended**) The method of claim 1, wherein one channel of the plurality of channels ~~comprise~~ comprises normalized shape information independent of location and scale.

3. (**Currently Amended**) The method of claim 1, wherein one channel of the plurality of channels ~~comprise~~ comprises path location information regarding sampling points of the stroke, each sampling point having a weight.

4. (Original) The method of claim 1, wherein the plurality of channels comprise a tunnel model channel.

5. (Original) The method of claim 1, wherein the plurality of channels comprise a language context channel.

6. (**Currently Amended**) The method of claim 2, wherein recognizing [[the]] a word pattern using the normalized shape information comprises template matching.

7. (**Currently Amended**) The method of claim 2, wherein recognizing [[the]] a word pattern using the normalized shape information comprises feature extraction.

8. (**Currently Amended**) The method of claim 3, wherein recognizing [[the]] a word pattern using path location information comprises using location matching, wherein location matching comprises weighting sampling points of location from beginning to end.

9. (**Canceled**)

10. (**Currently Amended**) The method of claim 4, wherein a tunnel of [[the]] a word pattern comprises a predetermined width on either side of a set of virtual keys representing a set of letters of the word on a virtual keyboard.

11. (**Currently Amended**) The method of claim 4, wherein recognizing [[the]] a word pattern using the tunnel model channel comprises traversing keys passed by the word pattern and identifying potential word candidates by partial string matching.

12. (**Currently Amended**) The method of claim 4, wherein recognizing [[the]] a word pattern using the tunnel model channel comprises transforming a tunnel and a gesture passing the tunnel.

13. (Original) The method of claim 2, wherein recognizing the shape comprises recognizing a difference between a user's gesture trace and an ideal template of the pattern.

14. (Original) The method of claim 13, further comprising displaying the difference between the user's gesture trace and the ideal template of the pattern by morphing the user's gesture trace to the ideal template.

15. (**Canceled**)

16. (**Canceled**)

17. (**Currently Amended**) The method of claim 1, further comprising

analyzing the stroke to differentiate between a tapping and a shorthand gesture input; and inputting at least one letter of a word by tapping the letter.

18. (Original) The method of claim 13, further comprising comparing a normalized word pattern and a normalized gesture trace and sampling the normalized word pattern and gesture trace to a fixed number of a plurality of points; and measuring the plurality of points relative to each other.

19. (Original) The method of claim 13, further comprising comparing a feature vector of the gesture trace and the feature vector of a word pattern.

20. (**Canceled**)

21. (**Currently Amended**) A shorthand symbol system for recognizing words, comprising:

a graphical keyboard layer for accepting a stroke as an input trace, wherein the keyboard layer contains a set of characters forming elements in the word without temporary target letters being placed adjacent to a current stroke location;

a storage for storing word patterns of a plurality of paths, wherein each path connects a set of letters received from the graphical keyboard layer; ~~and~~

a pattern recognition engine that recognizes a word pattern by processing the stroke using a combination of a plurality of channels ~~that~~, each channel selectively ~~process~~ processing a different ~~aspects~~ aspect of the input trace in relation to the plurality of the paths on the graphical keyboard layer, one channel of the plurality of channels processing a location-based similarity probability estimate; and

a computer for mathematically integrating outputs of the plurality of channels to produce an integrated probability estimate of a candidate word.

22. (**Currently Amended**) The method of claim 21, wherein one channel of the plurality of channels ~~comprise~~ comprises normalized shape information independent of location and scale.

23. (**Currently Amended**) The method of claim 21, wherein one channel of the plurality of channels ~~comprise~~ comprises path location information regarding sampling points of the stroke, each sampling point having a weight.

24. (Original) The system of claim 21, wherein the plurality of channels comprise a tunnel model channel.

25. (Original) The system of claim 21, wherein the plurality of channels comprise a language context channel.

26. (Original) The system of claim 21, wherein the plurality of channels comprise any one or more of: a shape information; a location information; a tunnel model channel; and a language context channel.

27. (Original) The system of claim 21, wherein the word letters comprise letters from an alphabet.

28. (Original) The system of claim 21, wherein the word letters comprise letters from Chinese pinyin characters.

29. (**Canceled**)

30. (**Currently Amended**) The system of claim [[29]] 21, wherein the word patterns are based on a lexicon, and wherein the lexicon comprises a very large collection of words used in a natural language.

31. (**Currently Amended**) The system of claim [[29]] 21, wherein the word patterns are based on a lexicon, and wherein words in the lexicon are rank ordered by usage frequency, and more frequent words are given higher a priori probability.

32. (**Currently Amended**) The system of claim [[29]] 21, wherein the word patterns are based on a lexicon, wherein the lexicon is customized from an individual user's previous documents for a specific application, and wherein part of the customized lexicon is based on a computer programming language.

33. (**Canceled**)

34. (**Canceled**).

35. (**Currently Amended**) The system of claim [[29]] 21, wherein the word patterns are based on a lexicon, and wherein the lexicon is customized for a specific domain.

36. (**Canceled**)

37. (**Currently Amended**) A method of recognizing words, the method comprising:

defining word patterns of a plurality of known words by a plurality of paths, wherein each path connects elements in a word on a virtual keyboard, wherein the virtual keyboard contains a set of characters forming elements in the word without temporary target letters being placed adjacent to a current stroke location;

accepting a stroke as an input on the virtual keyboard layout; ~~and~~

recognizing a word pattern by processing the stroke using [[a]] at least one location channel that selectively process different aspects of the stroke in relation to the plurality of the paths on the virtual keyboard, the at least one location channel processing a location-based similarity probability estimate;

determining a time spent inputting the stroke; and

modifying the location-based similarity probability estimate according to a path of the stroke on the virtual keyboard and the time spent inputting the stroke, to produce an output of the at least one location channel.

38. (Previously Presented) The method of claim 37, further comprising a channel for shape information.

39. (Previously Canceled).

40. (Previously Presented) The method of claim 37, further comprising a channel for a tunnel model.

41. (Previously Presented) The method of claim 37, further comprising a channel for a language context channel.

42. (Previously Presented) The method of claim 37, further comprising a channel for shape information; a location information; a tunnel model; and a language context.

43. (**New**) The method of claim 1, including ranking the candidate words in order of probability.

44. (**New**) The method of claim 1, including:

determining a time spent inputting the stroke; and

modifying at least one probability estimate according to a path of the stroke on the virtual keyboard and the time spent inputting the stroke, to produce an output of at least one channel of the plurality of channels.

45. (**New**) A method of recognizing words, comprising:

defining word patterns of a plurality of known words by a plurality of paths, wherein each path connects elements in a word on a virtual keyboard, wherein the virtual keyboard contains a set of characters forming elements in the word without temporary target letters being placed adjacent to a current stroke location;

accepting a stroke as an input on the virtual keyboard layout;

processing the stroke using a combination of a plurality of channels, each channel selectively measuring a different aspect of the stroke's similarity to the plurality of the word paths on the virtual keyboard;

using path location regarding sampling points of the stroke as one channel of the plurality of channels;

using normalized path shape independent of location and scale as another channel of the plurality of channels;

converting each different aspect of the stroke's similarity to probability estimates;

measuring time spent on inputting the stroke; and

mathematically integrating the probability estimates of the plurality of channels to produce integrated probability estimates of candidate words,

wherein the time information is used to adjust a relative weight between the path location channel and the normalized path shape channel in the mathematical integration of the probability estimates of the two channels.

46. (**New**) The method of claim 45, wherein yet another channel of the plurality of channels comprise a tunnel model channel, and wherein a tunnel of a word pattern comprises a predetermined width on either side of a set of virtual keys representing a set of letters of the word on a virtual keyboard.

47. (**New**) The method of claim 46, wherein recognizing a word pattern using the tunnel model channel comprises traversing keys passed by the word pattern and identifying potential word candidates by partial string matching.

48. (**New**) The method of claim 47, wherein recognizing a word pattern using the tunnel model channel comprises transforming a tunnel and a gesture passing the tunnel.

49. (**New**) A method of recognizing words, comprising:

defining word patterns of a plurality of known words by a plurality of paths, wherein each path connects elements in a word on a virtual keyboard, wherein the virtual keyboard contains a set of characters forming elements in the word without temporary target letters being placed adjacent to a current stroke location;

accepting a stroke as an input on the virtual keyboard layout;

recognizing a word pattern by processing the stroke using a combination of a plurality of channels, each channel selectively processing a different aspect of the stroke in relation to the plurality of the paths on the virtual keyboard, one channel of the plurality of channels processing a location-based similarity probability estimate;

determining a time spent inputting the stroke;

modifying the location-based similarity probability estimate according to a path of the stroke on the virtual keyboard and the time spent inputting the stroke, to produce an output of the one channel; and

mathematically integrating outputs of the plurality of channels to produce an integrated probability estimate of candidate words.

50. (**New**) The method of claim 49, including the step of ranking the candidate words in order of probability.

51. (**New**) The method of claim 49, wherein another channel of the plurality of channels comprise a tunnel model channel.

52. (**New**) The method of claim 51, wherein still another channel of the plurality of channels comprise a language context channel.

53. (**New**) The method of claim 52, wherein yet another channel of the plurality of channels comprises shape information.

54. (**New**) The method of claim 53, wherein recognizing a word pattern using the shape information comprises template matching.

55. (**New**) The method of claim 54, wherein recognizing a word pattern using the shape information comprises feature extraction.